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A REVIEW OF THE COXALIS GROUP OF THE ANT GENUS STICTOPONERA MAYR

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The genus *Stictoponera* is a chiefly Oriental and Papuasian assemblage of typical ectatommines. In my revision of the tribe Ectatommini, to be published elsewhere, I have enlarged *Stictoponera* to include the species from the same general region formerly placed in *Wheeleripone* Mann and *Rhopalopone* Emery. With the new composition, *Stictoponera* includes three or four rather vague and intergradient species-groups, of which the largest and most familiar comprises species with a low, paniform petiolar node and a distinct tooth on the dorsum of the posterior coxa. These species are the "typical" members of *Stictoponera* related to the genotype, *S. coxalis* (Roger). The species formerly called *Wheeleripone albiclava* Mann perhaps belongs in the *coxalis* group, but it is aberrant in sculptural detail and is somewhat intermediate to other groups in the shape of the node; it will not be discussed here.

The *coxalis* group is most in need of revision at the species level, and the notes offered here amount to a revision of those species already described of which recognizable material is now available to me. The majority of this material is in the Museum of Comparative Zoology, Harvard University, and is due mainly to the fine collecting of Dr. J. W. Chapman in the Philippines and the late Eric Mjöberg in northern Borneo. Dr. Chapman also has furnished considerable ecological information and other aid concerning many of the species, and it was he who inspired the present work and encouraged it continuously.

Since a key to the species is not yet possible because of doubts about several species not seen by myself, I can offer only the outline of characters as follows:

A. Second postpetiolar (IV abdominal) segment coarsely longitudinally costate, at least on the basal half.
   1. Eyes placed in the posterior quarter of the sides of the head: *S. postcropsis* Gregg.
   2. Eyes placed between the middle point and the posterior quarter of the sides of the head: *S. coxalis* (Roger), *S. costata* Emery, *S. birói* Emery.

B. Second postpetiolar (IV abdominal) segment not costate.
   1. Eyes placed anterior to middle of sides of head (according to original descriptions): *S. crassicornis* Forel, *S. spiralis* Karawajew.
   2. Eyes placed at or slightly behind the middle of the sides of the head: *S. bicolor* Emery, *S. binghamii* Forel, *S. laevior* Forel, *S. menadensis* Mayr.

In addition to the species listed above, with their synonyms, I have also seen two apparently undescribed species of group B,2.

Stictoponera laevior Forel

Ectatomma (*Stictoponera*) *laevius* Forel, 1905, Mitt. Naturh. Mus., Hamburg, **22:** 7, worker. Type locality: Tjibodas, Java.

Stictoponera laevior var. *avia* Forel, 1912, Notes Mus. Leyden, **34:** 96, all castes. Type locality: Nongkodjadjar, Java. **New Synonymy.**

A small, slender shining species with sparse foveation. The species was described from a unique, obviously teneral; var. *avia* refers to fully pigmented specimens. I have seen one worker from Poentjak, Java, no collector cited.

Stictoponera menadensis Mayr

Ectatomma (*Stictoponera*) *menadensis* Mayr, 1887, Verh. zool.-bot. Ges. Wien, **37:** 539, nota, worker.

Stictoponera stylata Menozzi, 1925, Philippine Jour. Sci., **28:** 440, pl. 1, figs. a, b, worker. **New Synonymy.**

Stictoponera menadensis var. *obscura* Santschi, 1932, Mem. Mus. Hist. Nat. Belg., (hors sèrie) **4** (5): 11, worker. **New Synonymy.**

This species is of medium size, shining, with full adult color dark reddish-brown to piceous, gaster black. Mesonotum with a

smooth longitudinal median strip free of foveation, extending in some specimens for a short distance onto the posterior portion of the pronotum; the latter otherwise always rather closely foveate. This species is apparently the common lowland and foothill *Stictoponera* in the East Indies and the Philippines. It occurs on Java and Sumatra together with *S. bicolor*, a very closely related species, but no intergrades between the two have yet been reported from these localities. I have seen no specimens of *menadensis* from mainland Asian localities, and records from the mainland are scarce in the literature. From the present data, *S. menadensis* appears to be a peripherally distributed form in the process of being replaced by *S. bicolor*, the latter spreading from southeastern Asia outwards into the archipelagic regions.

The types of *S. menadensis* and the var. *obscura* come from Celebes, and Santschi's description mentions no characters differentiating his variety from normal *menadensis* populations. The type of *S. stylata* came from Mt. Makiling, Luzon, and is present in the collection of Dr. J. W. Chapman. Unfortunately, Dr. Chapman's collection was somewhat damaged during the period when it was hidden in the mountains of Negros while the owner was interned in prison camp during the late war, and some of the specimens of *Stictoponera* became separated from their labels, among them the *stylata* type. Dr. Chapman and I have, however, segregated a small group of specimens in the collection by elimination of possibilities, and some specimen of this group is the type of *stylata*. Since all the specimens in this group are clearcut *menadensis*, and since *menadensis* is the common species on Mt. Makiling, we concluded that the above synonymy is required. Menozzi's description offers no characters in opposition to this decision, and the description itself could be the basis of the synonymy. Obviously, Menozzi did not have a clear idea of the identity of the typical *menadensis*, and merely described it under a new name. In addition to the Mt. Makiling record, the collections of Dr. Chapman and the Museum of Comparative Zoology contain series from the following Philippine localities: Sarai, Paete, Laguna (Luzon) (R. C. McGregor). Mt. Manapla, Negros Occidental (F. del Rosario); Lake behind Dumaguete; Cuernos Mts., several collections, 1800 to about 3600 feet, Negros Oriental (J. W. Chapman). Momungan and

Lanao, Mindanao (Chapman and D. Empeso). Los Baños, Luzon (F. X. Williams). Samar I. (McGregor et al). Kolambugan, Mindanao (C. S. Banks). There are also series from Borneo: Mt. Tibang, 1400 M., and Pajan (E. Mjöberg). Kuching (Hewitt). Sumatra: Wai Lima, Lampongs (Karny). In the Philippines, nests are built in rotten logs and tree fern stems and under moss on rocks. Dr. Chapman informs me that this, the most common *Stictoponera* in the Philippines, is usually seen running over foliage or resting in the axils of large leaves in wet foothill ravines.

Stictoponera bicolor Emery

Ectatomma (*Stictoponera*) *bicolor* Emery, 1889, Ann. Mus. Civ. Stor. Nat. Genova, **27:** 493-494, worker.

Ectatomma (*Stictoponera*) *bicolor* var. *minor* Forel, 1900, Jour. Bombay Nat. Hist. Soc., **13:** 316, worker.

Stictoponera menadensis subsp. *minor*, Brown, 1948, Psyche, **54:** 264, (teneral) worker.

Stictoponera bicolor, Brown, 1950, Wasmann Jour. Biol., **8:** 245-246, worker, synonymization of var. *minor*.

Since this form was described, not a few authors, including myself, have been confused by it one way or another. It is very close to *S. menadensis*, and has the same head shape, with prominently projecting posterior occipital lobes or "ears" and a corresponding, deeply concave, border between them as the head is viewed in full face. The eyes are rather large and situated well posterior to the middle of the sides of the head. The size is as in *menadensis*, with some series averaging a trifle smaller, but the color of the alitrunk is lighter and brighter, varying shades of orange-ferruginous. The head varies from about the same color as the alitrunk to piceous, the darker color being more common. The median smooth strip of the *menadensis* mesonotum is replaced in *bicolor* by fine, indefinite, more or less opaque longitudinal rugulation, and the sculpture throughout is usually stronger, closer and less shining. *S. bicolor* may or may not possess minute propodeal denticles; these appear to be an allometric character of the sort that grades through within and between series. The tenerals are straw-colored, and appear very different from fully-pigmented individuals in the same nest series.

Like *S. menadensis*, the present species has often been misidentified. It is still possible, of course, that *menadensis* and *bicolor* are mere geographical color representatives of one species, but from the present material they can still be separated. The record of *bicolor* from the Philippines is based on a male of uncertain species; no authentic *bicolor* records are yet known for these islands.

I have reviewed material from the following localities: Indochina: Coxan and Dong Mo (F. Silvestri). Hainan I.: Dwa Bi; Ta Han; Loi Molia; Nodoa (J. L. Gressitt). Sumatra: Wai Lima, Lampongs (Karny). Java: Pemalang (L. G. E. Kalshoven). Hong Kong: no further locality (Ris). Emery described this species from material taken in various Burmese localities, both upcountry and in Tenasserim.

Stictoponera binghamii Forel

Ectatomma (*Stictoponera*) *binghamii* Forel, 1900, Jour. Bombay Nat. Hist. Soc., **13:** 137, worker, female. Type locality: Burma [Pegu Yoma?].

Stictoponera borneensis Emery, 1901, Ann. Mus. Civ. Stor. Nat. Genova, **40:** 662, nota, worker. Type locality: Sarawak. **New Synonymy.**

This species resembles *S. menadensis*, but lacks the prominent lateral occipital ears and has a normal full adult coloration of rich ferruginous red. The eyes are at or close behind the middle of the sides of the head, and the posterior occipital border is straight to gently concave in different specimens and according to the view. Small teeth are present on the propodeum of most individuals. The insect is rather strongly shining, the foveation tending to be less dense than in *menadensis*, and the middle of the pronotum has a variable smooth, shining area free of foveae. The petiolar node seen from above is approximately as broad as long, length being favored in larger specimens. The second postpetiolar segment is very smooth and shining, foveation very indistinct and shallow and virtually confined to the sides. The antennal funiculi are rather thick, the median segments broader than long even in the largest specimens.

At first I had separated *binghamii* from *borneensis*, though the two were obviously closely related, but I now find that specimens referable to both were taken by Dr. Chapman on the same date at the same locality near his camp in the Cuernos

Mts., Negros Oriental, Philippines; these probably represent a single nest series, and in any case, it is apparent from a study of the full series, including those in Dr. Chapman's personal reserve collection, that the large and small forms are only allometric extremes of one form. I have also seen material referable to the same species from Tutu River, North Borneo (Mjöberg) and a specimen from "Pedada-B., Lampongs, Sumatra," unknown collector, and I feel sure that Forel's Burmese and Emery's Bornean types are merely the small and large extremes of one variable species, though I have not examined type material. Dr. Chapman tells me that he found this species nesting in rotten logs in ravines in forest.

STICTOPONERA CRASSICORNIS Forel New status

Ectatomma (*Stictoponera*) *binghami* subsp. *crassicornis* Forel, 1912, Zool. Jahrb. Syst., (suppl.) **15:** 51, worker. Type locality: Indrapura, Sumatra.

Forel states that the eyes are anterior to the middle of the sides of the head, which if true would separate this form from *binghamii* very decisively. The other characters cited, however, indicate considerable similarity, and Forel may well have been mistaken about the eyes. The description of *S. spiralis,* the next species following, also claims a similar position for the eyes. Among all the series available to me, I have seen no *Stictoponera* specimens with the eyes in front of the middle of the sides of the head. In any case, it is very unlikely that *crassicornis* can be a race of *S. binghamii,* since the known distribution of the latter straddles the Sumatran type locality of *crassicornis.* Provisional specific rank is indicated for *crassicornis* until the type can be re-examined.

STICTOPONERA SPIRALIS Karawajew

Stictoponera spiralis Karawajew, 1925, Konowia, **4:** 79-81, worker.

This species, also described from Sumatra, reads very much like *S. crassicornis* in what seem to be the significant features, and it is possible that the two names are synonymous.

STICTOPONERA BIRÓI Emery

Stictoponera birói Emery, 1902, Term. Füzetek, **25:** 154, worker.

S. birói, the only species of the genus so far recorded from New Guinea, appears to be quite distinct from the Indomalayan forms on the basis of its original description.

Stictoponera posteropsis Gregg

Stictoponera posteropsis Gregg, 1952, Psyche, **58:** 77-80, figs. 1, 3a, 3c, female.

This very aberrant species has large eyes situated almost at the extremes of the posteriorly salient occipital corners. The type, a dealate female, came from Sumatra, but I have seen a few additional worker specimens from the Cuernos Mts., Negros Oriental (Dr. Chapman), taken in rotten logs in forest ravines. Some of these workers are larger even than the female type, and their color is dark piceous instead of ferruginous red.

Stictoponera costata Emery

Ectatomma (*Stictoponera*) *costatum* Emery, 1889, Ann. Mus. Civ. Stor. Nat. Genova, **27:** 494, worker. Forel, 1900, Jour. Bombay Nat. Hist. Soc., **13:** 316, 317, worker. Bingham, 1903, Fauna Brit. India, Hym., **2:** 83, worker.

Ponera rugosa Fr. Smith, 1857, Jour. Proc. Linn. Soc. London, Zool., **2:** 66, worker; name preoccupied by Le Guillou, 1840. **New Synonymy.**

Stictoponera costata Emery, 1901, Ann. Mus. Civ. Stor. Nat. Genova, **40:** 662, worker.

Stictoponera costata var. *unicolor* Forel, 1901, Rev. Suisse Zool., **9:** 335, worker, male. **New Synonymy.**

Stictoponera rugosa var. *parva* Forel, 1913, Zool. Jahrb. Syst., **36:** 6, worker. **New Synonymy.**

?*Stictoponera costata* var. *simalurensis* Forel, 1915, Tijdschr. v. Ent., **58:** 23, worker. **New Synonymy,** with doubt.

Stictoponera costata var. *pinealis* Wheeler, 1929, Boll. Lab. Zool. Portici, **24:** 31. **New Synonymy.**

Stictoponera wallacei Donisthorpe, 1932, Ann. Mag. Nat. Hist., (10) **10:** 447, *nom. pro Ponera rugosa* Fr. Smith. **New Synonymy.**

The key reference to this form is that of Emery for 1901 (*loc. cit.*) in which he cites variation in size among specimens from Sumatra and Mentawei (the *costata* type locality is in Burma) and suggests, but does not declare, the synonymy with *Ponera rugosa* of Smith. He also cites differences between *costata* and a type of *coxalis* he received from the Roger Collection in Berlin, the latter differing "from *costata* in the much less coarse sculpture of the whole body, and especially of the abdomen, and in the more slender antennae, with the flagellar segments less thick, the third to the fifth longer than thick (thicker than long in *S. costata*)." I am able to confirm and amplify Emery's differentia-

tion of these two species, as will be seen below under *S. coxalis.* In the series I refer to *S. costata,* stemming from ten localities ranging from Malaya to Borneo and Mindanao, there is a large amount of variation in size, color, and degree of development of sculpture; the variation in sculpture of the first gastric (postpetiolar) segment is particularly notable. The prevailing color in North Bornean specimens is rich ferruginous red, but certain specimens from Mindanao are piceous, and the female type of *pinealis* Wheeler, from Penang, is deep reddish with the gaster black. The variety *unicolor* Forel, based largely on a Bornean male, was never really differentiated from the types of *costata.* The various color conditions are constant within some nests, but not in others; and considering the long teneral period shown by ants of this genus, the relative conspicuousness of tenerals under the collector's eye, and the chances of color changes in preservative and cabinet, I can attach no great importance to color by itself. In the present material, color, size, variation in the shape of the lateral occipital "ears" or lobes, and sculpture are discordant geographically, so that it seems not possible to recognize objective geographical races based on these characters.

Emery mentions, as stated above, that certain Sumatran series varied in size, and it seems likely that Forel's variants *parva* and *simalurensis* are merely small *costata.* The Bornean specimens show significant size variation even between relatively close localities. Essentially, the sculpture of *costata,* except for the very coarsely and regularly costate second gastric (second postpetiolar or IV abdominal) segment, is in the form of large, rather deep punctures, foveae or pits, with more or less distinct and smooth, shining spaces between them. On the first gastric segment, the punctures tend to be more elongate, and the spaces between them, particularly toward the posterior edge of the discal surface, begin to form more or less definite longitudinal ridges or costae. In some specimens, such as those from Mt. Penrissen and Mt. Tibang, in Borneo, the spaces are broad and shining, and the punctures definitely prevail over the rather weakly suggested costae, while in others, such as most Bornean specimens and the *pinealis* type, the costae are closer and sharper on the first gastric segment, at least posteriorly, and the punctures are closer together and more elongate. The sculpture of

the remainder of the body follows that of the gaster more or less closely, but differences are harder to see and describe. In spite of these rather distinct differences between extremes, I find that Borneo alone supplies a full set of intergrades which is enough to obscure any possible taxonomic split based on this character. It therefore seems that Emery was correct in maintaining *costata* as a single taxonomic unit despite the variation he saw. His reasonable suggestion that F. Smith's *rugosa*, from Sarawak, equalled *costata* is also accepted here, and since the name *rugosa* is preoccupied, and Donisthorpe's *nomen novum wallacei* later than *costata*, the name *costata* will remain in use.

I have studied series in the Museum of Comparative Zoology from the following localities: North Borneo and Sarawak: Mt. Penrissen; Mt. Tibang; S. Slau; Brooketon; Pajan; S. Saranibo; Baian River (E. Mjöberg). Mindanao, Lanao district: Maria Christina Falls (J. W. Chapman). Momungan (D. Empeso) Malaya: Penang Island (F. Silvestri), type of var. *pinealis*. Sumatra: Langkat, E. Coast (Jourin).

Stictoponera coxalis (Roger)

Ponera coxalis Roger, 1860, Berl. ent. Zeitschr., **4:** 308, worker.

Ectatomma (*Stictoponera*) *coxale* Forel, 1900, Jour. Bombay Nat. Hist. Soc., **13:** 316, worker. *Nec* Bingham, 1903, Fauna Brit. India, Hym., **2:** 84, fig. 44, worker.

Stictoponera coxalis Emery, 1901, Ann. Mus. Civ. Stor. Nat. Genova, **40:** 662, worker.

Roger described this species very incompletely for modern needs from specimens collected by Nietner in Ceylon. Emery's statement of the differences between *coxalis* and *costata* has already been translated above under *S. costata*. I have been able, through the courtesy of Prof. M. Beier, of the Naturhistorisches Museum, Vienna, to examine a worker (here designated as lectotype, and so labelled) and a dealate female from the type series of *coxalis*, that Roger had early sent to Gustav Mayr. As Emery mentions, the sculpture throughout is considerably finer than in *costata;* it is also denser and consists more predominantly of longitudinal costulation or coarse striation instead of the large, predominating punctures of *costata*, although somewhat smaller punctures are still clearly present and often conspicuous. Under

lower magnifications, *coxalis* tends to appear more opaque generally than does *costata*. On the first gastric segment, there are up to two or three irregular, but rather close and fine longitudinal costae for every one seen in the average *costata* specimen. Also, as mentioned by Emery, the funiculi are notably more slender in *coxalis*, with the third through the fifth (I would include the sixth and possibly also the seventh) funicular segments slightly longer than broad. The same segments are broader than long, though somewhat variable in proportions, in the *costata* samples I have seen.

I agree with Emery's separation of the two species on the present evidence; obviously, however, the two are very closely related. To my knowledge, *S. coxalis* remains known only from the type series from Ceylon, though various authors have followed Bingham in confusing this species with *S. menadensis* and *S. bicolor*. When better collections are available from southern India, it may be necessary to re-examine the relationship of *coxalis* and *costata*.

Note on "*Stictoponera sauteri*"

The name *Stictoponera sauteri* (Chapman and Capco, 1952, Check list of the ants of Asia, Monogr. Inst. Sci. Tech., Manila, **1:** 30) is a combination proposed in error, and actually refers to *Ectomomyrmex sauteri*, a species described earlier by Forel. This species has no connection with *Stictoponera;* the Check List combination was purely an unintentional clerical slip.